III. REMARKS

In the Office Action, Claims 1-5, 7-9, 11-12, 15-19, 21-23, 25-27, 29 and 31 were rejected under 35 U.S.C. 103 as being anticipated by Hui (US 6674820) in view of Chennakeshu (US 5371471) for reasons set forth in the Office Action. Various ones of the claims were rejected under 35 U.S.C. 103 as being unpatentable, namely, Claims 6, 20, 28 and 32 over Hui in view of Chennakeshu and Kubo (US Pub. 2003/0081702), claims 10, 24 and 30 over Hui in view of Chennakeshu and Katsuragawa (US 5907586), and claims 13-14 over Hui in view of Chennakeshu for reasons set forth in the Office Action.

The following argument is presented to overcome the rejections under 35 U.S.C. 103 and to show the presence of allowable subject matter in the claims.

The examiner alleges that Hui discloses selecting at least one off the highest and/or the most reliable impulse response values. The position of the examiner is traversed respectfully for the following reasons.

Hui discloses a method, system and a receiver for obtaining estimates of a complex-valued baseband channel (column 3, lines 15-20).

Hui discloses a receiver wherein the channel estimator 415 generates the channel coefficients and provides these channel coefficients to the equalizer 405 utilizing a plurality of candidate autocorrelations obtained from the autocorrelation memory 420. The channel estimator 415 includes a plurality of coefficient estimation circuits 422 each including a whitening filter estimation circuit 425, a whitening filter 430, and a least squares channel coefficient estimation circuit 435. Each of the plurality of candidate autocorrelations is processed by one of the coefficient estimation circuits 422 and the resulting plurality of channel coefficient sets is provided to the selection circuit 440. The selection circuit 440 is configured to select one of the generated channel coefficient sets

as the channel coefficients and provide the selected set to the equalizer 405 (column 9, lines 42-57).

Thus, Hui does not teach, disclose or suggest that highest and/or most reliable impulse response values are to be selected.

The Examiner further alleges that Chennakeshu discloses determining a reference signal using at least one impulse response value and a symbol sequence assumed as transmitted. This position of the examiner is respectfully traversed.

Chennakeshu discloses an equalizer characterized by a decoding complexity which is reduced by tracking a reduced number of estimated reference symbol constellation points, and taking advantage of the geometry to estimate the remaining symbol constellation points. Reference symbol constellation points are updated directly to compensate for changes in the channel, instead of determining channel impulse response coefficients (Abstract).

Chennakeshu notices that the entire set of 16 constellation points can be derived from the basic set of estimated reference symbol constellation points given by $\{Z_{00}(n), Z_{01}(n), Z_{02}(n), Z_{03}(n)\}$. All other estimated constellation points can be obtained by rotations of these 4 basic quantities by $(\pi)/2$, (π) and $3(\pi)/2$ radians (column 10, lines 3-12).

Futher Chennakeshu discloses that each distance value can be computed by rotating on each of the four stored reference states $\{\hat{z}\}$ or {Z} in a counterclockwise direction by an integral multiple of 90 degrees or by rotating the received signal in clockwise direction an integral multiple of 90 degrees. Simplifications in computation may further be achieved by grouping distance computations and avoiding repetitions in computations (column 12, lines 40-54).

In Figure 5, a synchronization unit 9 synchronizes the signal and separates the received samples into samples relating to synchronized samples and message samples. An initial channel impulse response estimation unit 11 receives the synchronized samples and is provided with the same predetermined synchronized symbols which were combined with the message data before transmission at the transmitter. The channel impulse response estimation unit provides initial values of the channel impulse response coefficients $\{h_0,h_1,\ldots.\}$.

An initial reference symbol unit 13 receives the initial channel impulse response coefficients $\{h_{0[n]},h_{1[n]},\ldots.\}$, the known synchronized symbols and the received synchronized samples, and constructs initial values of estimated symbol constellation points $\hat{z}$ and Z.

Thus, Chennakeshu does not teach disclose or suggest that a reference signal would be determined by using at least one impulse response value and a symbol sequence assumed as transmitted. Chennakeshu stays silent about determining a reference signal in any way.

Further, especially regarding claims 2 and 16, the Examiner notes that Chennakeshu discloses the using of at least one later impulse response value in Figure 5, label 21. This point is respectfully traversed.

It is dearly seen in Figure 5 of Chennakeshu that the signal fed into the equalizer 20 is indexed r sp[n], wherein n represents the current time. The feedback loop 21 gives information on the history, not on the future. Furthermore, Chennakeshu provides no indication that future samples r sp would be used.

Also Hui is silent about using future values for branch metric computation.

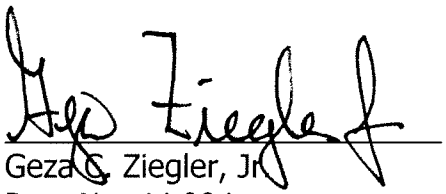
The foregoing arguments apply also to the new claims 33-34 which contain the subject matter of claim 16 and, therefore, do not raise any new issues.

In view of the foregoing argument, it is believed that the claims of the present application are inventive over the teachings of the cited art, considered individually or in combination. It is also noted that the distinctive differences between the teachings of the individual references of the cited art and the presently claimed subject matter would direct one away from the practice of the present invention, and would not motivate one to combine the references.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for the additional claims fee ($100) as well as any other fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,



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